

Application No.: 09/867,846
Amendment dated Oct. 6, 2003
Reply to Office action of July 9, 2003

Docket No.: M4065.0847/P847-A

REMARKS

The drawings have been amended. Claims 2, 6, 7, and 12-20 have been amended. No new matter has been added. Claim 1 was previously cancelled. Claims 8-11 were previously withdrawn. Claims 21-30 have been added. Consequently, claims 2-7 and 12-30 are pending in this application.

The Declaration is cited as being defective because it does not state that the person making the declaration believes the named inventors to be the original, first, and joint inventors of the subject matter which is claimed and for which a patent is sought. A new Declaration in compliance with 37 C.F.R. § 167(a) has been filed herewith.

The drawings are objected to for failing to comply with 37 CFR 1.84(p)(5) because they do not include reference signs mentioned in the specification. A substitute drawing which includes reference characters "out1," "out2," "out3," "out4," "gate1," "gate2," "gate3," and "gate4," as described in the specification, has been submitted herewith. Therefore, withdrawal of this objection is respectfully requested.

Claims 2-5, 7, and 12-14 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Tanaka et al., U.S. Patent No. 5,497,390 ("Tanaka"). This rejection is respectfully traversed.

The present invention relates to a method of operating a photodetector. As such, amended independent claim 2 recites a method comprising "accumulating photocarriers in each of a plurality of photocarrier integrators" and "successively enabling each of said plurality of photocarrier integrators to connect a common photodiode, each of said photocarrier integrators connecting to said common photodiode through a respective photodiode output port, said plurality of photocarrier integrators accumulating photocarriers generated by said photodiode during different time periods from one another." Amended independent claim 12 recites a method comprising "generating photocarriers in a photodiode within a pixel during a plurality of time periods;

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accumulating photocarriers in each of a plurality of photocarrier integrators within said pixel such that each photocarrier integrator accumulates photocarriers generated during a time period different from a time period in which other photocarrier integrators accumulate photocarriers; sampling said photocarriers from said photocarrier integrators; and determining a range of an object using said sampled photocarriers.”

Tanaka relates to a semiconductor laser apparatus which can select polarization in the TE or TM mode. (Col. 2, lines 22-24). Tanaka’s laser apparatus can be employed in an optical information recording and reproducing apparatus, which includes a photodiode and circuitry for obtaining servo signals and a reproduction signal. (Col. 7, lines 6-35).

Tanaka fails to disclose all limitations of amended independent claims 2 and 12. With respect to amended independent claim 2, Tanaka fails to disclose “each of said photocarrier integrators connecting through a respective photodiode output port.” The Office Action states that Tanaka’s sample and hold circuits 110 and 111 correspond to the photocarrier integrators of the present invention. (Office Action at 4). Even assuming this is the case, Tanaka’s sample and hold circuits 110 and 111 both receive a signal which is output from the all four lines 107a-d connected to photodiode 107 as shown in FIG. 10. Therefore, according to Tanaka, sample and hold circuit 110 receives a signal from the photodiode through the same lines as sample and hold circuit 111. In contrast, amended independent claim 2 recites “successively enabling each of said plurality of photocarrier integrators to connect to a common photodiode, each of said photocarrier integrators connecting through a respective photodiode output port.”

With respect to amended independent claim 12, Tanaka fails to disclose “determining a range of an object using said sampled photocarriers.” As noted above, Tanaka relates to a semiconductor laser apparatus which can be employed in an optical information recording and reproducing apparatus. Accordingly, Tanaka is silent about

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determining a range of an object using sampled photocarriers. For at least these reasons, withdrawal of this rejection is respectfully requested.

Claims 6 and 15-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tanaka. This rejection is respectfully traversed.

Amended independent claim 17 recites a method comprising "sampling a plurality of different samples of light in a photodiode, each of said plurality of different samples being 90 degrees out of phase with one another" and "successively gating photocarriers representing each of said different samples from said photodiode through a respective output port, each output port associated with a respective photocarrier integrator, such that each photocarrier integrator accumulates a different sample than other of said photocarrier integrators."

The subject matter of claims 6 and 15-20 would not have been obvious over Tanaka. Specifically, the Office Action does not establish a *prima facie* case of obviousness. Courts have generally recognized that a showing of a *prima facie* case of obviousness necessitates three requirements: (i) some suggestion or motivation, either in the references themselves or in the knowledge of a person of ordinary skill in the art, to modify the reference or combine the reference teachings; (ii) a reasonable expectation of success; and (iii) the prior art references must teach or suggest all claim limitations. See e.g., In re Dembiczak, 175 F.3d 994 (Fed. Cir. 1999); In re Rouffet, 149 F.3d 1350, 1355 (Fed. Cir. 1998); Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc., 75 F.3d 1568, 1573 (Fed. Cir. 1996).

As noted above, Tanaka fails to teach or suggest all limitations of amended independent claim 2. Specifically, Tanaka fails to teach or suggest "each of said photocarrier integrators connecting through a respective photodiode output port." Likewise, Tanaka fails to teach or suggest all limitations of amended independent claim 17. Tanaka does not teach or suggest "successively gating photocarriers representing each of said different samples from said photodiode through a respective output port, each output

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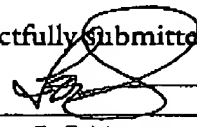
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port associated with a respective photocarrier integrator, such that each photocarrier integrator accumulates a different sample than other of said photocarrier integrators," as recited by amended independent claim 17. As discussed above, even assuming that Tanaka's sample and hold circuits 110 and 111 correspond to the photocarrier integrators of the present invention, Tanaka's sample and hold circuit 110 receives a signal from the photodiode through the same lines as sample and hold circuit 111. For at least these reasons, withdrawal of this rejection is respectfully requested.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

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Respectfully Submitted,

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Attachments